

# MISSOURI. Conservationist

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# The Grand Passage

Each year, beginning in late summer, an extraordinary natural event begins—migration. Migration is the journey from a breeding site to where a bird spends the rest of the year. This “miracle of flight”

is part of the annual cycle of life. Hundreds of millions of birds migrate through Missouri between late summer and winter.

Birds migrate using four primary types of “compasses” to navigate: the sun, the stars, the earth’s magnetic field and visual landmarks. Temperature and day length play a role in movement timing or when the birds move from specific locations throughout their migration.

Many Missouri birds are short-distance migrants spending the winter in Arkansas or Texas, though about a third of our breeding bird species fly long distances outside of the United States, where food and shelter help them survive the winter. Stopover or staging areas allow birds to find food, build body fat and rest for their annual migrations. Birds remain at these staging areas based on weather, food availability, how much fat they have stored and day length.

In the waning days of summer, watch first for shorebirds, warblers, teal and monarch butterflies. During crisp fall days, look for kettles of hawks spiraling south. On clear November nights, listen for the chorus of snow geese journeying south. Migration’s end is signaled by the arrival of bald eagles and other hearty species such as goldeneyes and common mergansers.

Fast migration facts: Ruby-throated hummingbirds weigh about 4.8 grams and can store enough fat to fly nonstop over a 600-mile stretch of open ocean from the Gulf Coast to the Yucatan Peninsula in Mexico, or vice versa in the spring. Hawks and other large soaring birds migrate overland, not over water. Along the eastern coastal lowlands of Mexico, huge concentrations soar on rising warm air pockets—observers can watch several hundred to thousands of migrating birds on a good day.

A large, spectacular migratory event is called a “Grand Passage” and may occur either in the fall or the spring migration. In November 1995, 90,000,000 waterfowl flew south in front of an extreme cold front. Their migratory movement created a Grand Passage where the flocks of birds were so dense that Midwest airport radars couldn’t distinguish between birds and airplanes. Another example of a Grand Passage is the mass arrival of trans-Gulf migrants in Texas and



Monarch butterflies begin migrating in early September.

Louisiana after their 600-mile flight across the Gulf of Mexico,

Other animal groups migrate south for winter, including bats, dragonflies and butterflies. From early to mid-September, watch for migrating monarch butterflies. You can often observe hundreds of monarchs a day. They migrate approximately 3,000 miles to central Mexico, making them the only butterfly to make such a long, two-way migration every year. However, it’s their children and grandchildren

that complete the migration during the next year.

To protect and conserve all these species of birds and the monarch butterfly, habitat must be protected in the United States, Canada, Mexico, Central America and South America. Without breeding ground habitat, wintering ground habitat, quality staging or stopover habitat and the interconnectedness of all these locations, North America’s migration would slowly decline and possibly cease to exist.

Get involved! Today’s technology allows citizens to provide information on migration dates and individual species locations. Universities and organizations offer websites for anyone to log their migration observations. Some websites allow the user to track migration patterns, and there are smart phone applications on real-time migration mapping. This is a great opportunity to both contribute to scientific studies and get outdoors with family and friends. Seeking out and recording these fascinating natural events is a fun, easy and accessible way to introduce people of all ages and abilities to the outdoors. It’s a natural way to help create conservationists and preserve our outdoor heritage.

Take the time to enjoy the fall migration and introduce others to this wonder of nature. Observe monarch butterflies, look for shorebirds, pursue waterfowl or explore for eagles. You might be lucky and experience one of Missouri’s Grand Passages—and even if you don’t, you will certainly witness one of our most spectacular natural events.

Tim Ripperger, deputy director





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## WILD YOUTH

Brandon Pope's mission and life's work is an invaluable asset to the greater Kansas City community [*Opening the Outdoors to Everyone*; July]. No doubt his work, and the work of others like him, has ignited an interest in experiences that otherwise may not have been granted to the lives of the youth they have reached. Thank you, Mr. Pope, for all you have done and continue to do to enrich the lives of urban youth and instill in them an appreciation and wonder for their state's natural resources and wildlife.

*Steven R. Lande, Kansas City, Mo.*

## KAUFFMAN'S KINGBIRDS

I really enjoyed the article in the July issue on the kingbirds of Kauffman Stadium [July; Page 8]. I have attended games there for the past 30-plus years and have always wondered

about the birds flitting around. Often they are more interesting to watch than the action on the field. Great story by Larry Rizzo and, as always, Noppadol Paothong contributed outstanding photos.

*David Hoefer, Leawood, Kan.*

## FROM INDIA TO STL

I live in the southern city of Bangalore in India and I have been visiting St. Louis frequently for over 10 years now. Since my daughter and son-in-law live here, I have been subscribing to the *Missouri Conservationist* and have long enjoyed the great articles and wonderful images. I am a keen nature enthusiast and an active volunteer for some conservation issues in Karnataka, the state where I live.

I have been fortunate to stay close to Forest Park, in St. Louis, and have been walking there

regularly and observing the birds and the mammals. I've met people like Danny Brown, who have shown me some beautiful spots in the park to sit quietly and observe. I have visited a few of the nature areas, too, such as Shaw Nature Reserve, and the Missouri Bottoms area, and I am always interested in what the articles tell me about such places.

The photographs, of course, are quite stunning. I am an amateur photographer, and I am collecting the issues just for the photos sometimes! I particularly loved the roadrunner piece [June; Page 22]... a bird that I only knew through the "Beep-Beep" cartoons!

Thank you, once again, for a lovely magazine, where I get so much information about the wildlife and conservation issues of Missouri.

*Deepa Mohan, via Internet*

## GEOCACHING

Loved, loved, loved Heather Bodendieck's story about geocaching with her family. My husband and I have been geocaching for over 15 years, from Colorado to Missouri to New Jersey. We also discovered a website, [www.letterboxing.org](http://www.letterboxing.org), that hides handmade stamps all over the country and is family friendly. Have Heather give it a whirl.

*Donna Accardi, Osage Beach*

## WHERE IS IT?

I was disappointed to see that your current issue does not include the "What is it?" feature, where you show a small closeup on the back cover and then show the identity inside the back cover. As an elementary school teacher, I valued this feature. I used it to help teach my students how to include detail in their descriptions. They loved it, and so did I. Any plans to reintroduce this element in future issues?

*Leslie Forsythe, ELL Teacher*

*Gotsch Intermediate School, St. Louis*



## Reader Photo

## BACKYARD QUAIL

Cinderella Morff of Lohman captured this image of a quail chick that visited her yard, along with its mother and several other chicks. Morff and her husband live on 26 acres. "About five years ago, Jerry, my husband, removed the excess cedar trees between our house and the neighbor's," said Morff. "Since then, we have noticed that the quail have come back in numbers." In addition to the quail, Morff said removing the cedars has resulted in colorful wildflowers populating the field in the summer. Morff considers herself just an amateur photographer, but has won various photo contests throughout the years. She especially loves taking photographs of wildlife in her yard.

*Editors' note: The decision was made to return to the "I am Conservation" feature on the back cover. We are keeping track of public comments, however, and we will record your opinion. The "What is it?" feature will continue to appear in Xplor, our children's magazine. Subscription information can be found on Page 3.*





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## Kids' Magazine



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# NEWS & EVENTS



## Public Dove Hunting Areas

Dove hunting season opens Sept. 1. To provide quality hunting opportunities, the Conservation Department plants sunflowers, wheat, millet and other crops on dozens of conservation areas statewide. Dove-field locator maps are available at [mdc.mo.gov/18183](http://mdc.mo.gov/18183). Crops grow better on some areas than others, so advance scouting is important.

Safety consciousness is particularly important on public hunting areas. Space yourselves at safe intervals. Don't shoot at birds lower than 45 degrees above the horizon. Politely call attention to safety issues the first time they arise. If you plan to introduce a new hunter to doves, leave your own shotgun at home, so you can devote your full attention to your protégé.

Hunters are asked to report any doves they shoot that have leg bands. This can be done by calling 800-327-2263 or online at [reportband](http://reportband.gov/).

[gov/](http://reportband.gov/). You will need to give the band number, date and where the bird was killed.

## Visit a Forest at the State Fair

2011 is The Year of the Forest, and the Conservation Pavilion at the Missouri State Fair will offer cool, entertaining ways to learn about how to care for trees and how they benefit the Show-Me State's economy and environment.

The Missouri Department of Conservation's pavilion is at the south end of the fairgrounds. Professional foresters will be on hand Aug. 11 through 21 with programs and answers to questions about cicadas and other forest-related topics.

The air-conditioned Conservation Kids Room, open from 10 a.m. to 6 p.m. daily, provides a welcome retreat from summer heat. This also is the place to go for children's programs and hands-on exhibits designed to help kids discover the many adventures offered by forests.

Live programs offered at the Conservation Pavilion this year include:

- » Insects and Diseases of Missouri trees, 11 a.m. and 1:30 p.m. Aug. 11.
- » Fish Cleaning and Cooking, 11 a.m. and 1:30 p.m. Aug. 12 and 13.
- » Tree Identification, 2:30 p.m. Aug. 12.
- » Calling All Wildlife, 11 a.m. and 1:30 p.m. Aug. 14.
- » Elk Restoration, 11 a.m. and 1:30 p.m. Aug. 18.
- » Tree Planting & Pruning, 11 a.m. and 1:30 p.m. Aug. 19.
- » Black Bears in Missouri, 11 a.m. and 1:30 p.m. Aug. 21.

Conservation agents, biologists, foresters and other experts will be on hand to answer questions from 9 a.m. to 9 p.m. daily.

## Nominate Now

The Missouri Conservation Commission would like to recognize citizens who make outstanding contributions to conservation. Nominations are being sought for the Master Conservationist Award and the Missouri Conservation Hall of Fame. The Master Conservationist Award honors living or deceased citizens while the Missouri Conservation Hall of Fame recognizes deceased individuals. Those who can be considered for either honor are:

- » Citizens who performed outstanding acts or whose dedicated service over an extended time produced major progress in fisheries, forestry or wildlife conservation in Missouri.
- » Employees of conservation-related agencies who performed outstanding acts or whose dedicated service over an extended time produced major progress in fisheries, forestry or wildlife conservation in Missouri.

Anyone can submit a nomination, which should include a statement describing the nominee's accomplishments and a brief biography. Criteria and nomination forms for each award are available on the MDC website at [mdc.mo.gov/node/7763](http://mdc.mo.gov/node/7763) and [mdc.mo.gov/node/7759](http://mdc.mo.gov/node/7759). Please submit nominations by Sept. 1 to Denise Bateman, Missouri Department of Conservation, PO Box 180, Jefferson City, MO 65102-0180 or email to [Denise.Bateman@mdc.mo.gov](mailto:Denise.Bateman@mdc.mo.gov).



A screening committee appointed by the Department's director meets annually to consider nominees, with the Conservation Commission conveying final approval.

## Pen-Reared Quail Are No Bargain

Recent evidence presented during the Missouri Bobwhite Quail Summit confirm what decades of scientific studies have shown—releasing pen-reared birds is a dead-end strategy for restoring quail and pheasant populations.

More than 160 landowners from as far away as Minnesota joined biologists and quail researchers attending the event at the MU Extension's Bradford Farm June 16. They heard presentations by quail experts and took part in field tours to learn about the latest in quail conservation and

habitat improvement techniques. They also shared success stories about blending production agriculture with wildlife management.

Quail Forever Regional Biologist Elsa Gallagher summarized the findings of studies conducted in 11 states and England over the past 40 years. The most recent studies took place between 2002 and 2009. A 2008 study in Nebraska focused on two particular strategies involving pen-reared birds—predator control and mechanical surrogate rearing systems. Both proved ineffective in boosting quail and pheasant numbers.

Mechanical propagation systems provide food, water, heat and shelter for chicks while avoiding human contact that might cause the birds to become tame. The Nebraska study followed pheasant chicks released with such a

mechanical system on two shooting preserves and two public wildlife areas. Only 12 percent of chicks survived until the hunting season, and less than 1 percent survived a year. Of the 170 chicks placed in the units at the beginning of the study, only six showed up in hunters' bags.

A 2005 study on a private hunting plantation in Georgia involved 1,641 bobwhite quail chicks that were reared in a captive propagation system. Management after release included predator control and supplemental feeding. Only 13 of those birds showed up in hunters' bags. Studies in Idaho, Iowa, Kentucky, Minnesota, Nevada and South Dakota showed similar results.

To learn more about managing your land for suitable quail habitat, visit [mdc.mo.gov/node/3678](http://mdc.mo.gov/node/3678).



## ASK THE OMBUDSMAN

**Q:** Why is a female bullfrog called a bullfrog?

**A:** Bullfrogs are named for the sound made by the calling males that is reminiscent of the bellowing of bull cattle. The species'

common name is the bullfrog, so both the male and female animals are called bullfrogs.

**Q:** I used some cut limbs to decorate a ceiling in an entertainment room in my house. Later, I noticed an accumulation of fine powder on my floor under those limbs. It continues to reappear after being cleaned up. Do you know what is causing it?

**A:** You probably have some wood-eating beetles in those limbs. The powder is the fine sawdust that is falling from the limbs as the beetle larvae tunnel through them. There are several species of powderpost beetles that will infest various types of wood. When the larvae transform into adults and exit the wood, they leave round holes of about 1/16-inch diameter on the wood's surface. Kiln-dried woods (such as

lumber you would purchase) and finished woods are less likely to host the insects, which require some moisture in the wood. Using old wood from a barn or outside woodpile for paneling is another way to bring the insects into a home. You should remove the limbs from your house and monitor for any further sign of infestation.



Bullfrog

Ombudsman Tim Smith will respond to your questions, suggestions or complaints concerning Department of Conservation programs.

Write him at PO Box 180, Jefferson City, MO 65102-0180, call him at 573-522-4115, ext. 3848, or e-mail him at [Ombudsman@mdc.mo.gov](mailto:Ombudsman@mdc.mo.gov).

## Protect Missouri's Outdoors

If you camp, boat or fish over the Labor Day weekend, make a commitment to protect Missouri's outdoor resources from invasive exotic species. Missouri is at the geographic center of a growing invasion by exotic plants, animals and plant diseases. Among the better-known invaders are the zebra mussel, gypsy moth and bush honeysuckle. The list is much longer, however, including:

- » Emerald ash borer, which kills every ash tree it attacks.
- » Chinese mystery snail, a large Asian mollusk that shoulders aside less robust native snails.
- » Northern snakehead, an Asian fish that can travel cross-country and devours bass, sunfish and catfish.
- » Asian carp, which have multiplied dramatically since invading the Missouri and Mississippi rivers about 20 years ago and whose detrimental impacts on valuable commercial and sport fisheries have yet to be determined.
- » Spotted knapweed, a plant from Eurasia

that takes over pastures and roadsides, rooting out native plants and ruining pastures for cattle.

- » Thousand cankers disease, a fungal infection carried by the tiny walnut twig beetle, kills black walnut trees and could cause nearly \$1 billion in losses of nuts, lumber and planting stock if it reaches Missouri.
- » Purple loosestrife, an attractive but highly invasive plant that turns diverse, healthy wetlands into impenetrable stands of vegetation largely useless for wildlife and recreation.
- » Rusty crayfish, a large, aggressive species that has spread via the fishing bait trade and displaces native crayfish.

In some cases, such as the emerald ash borer, gypsy moth and thousand cankers disease—citizens can help by obtaining firewood where they camp and burning it all before they leave. In other instances, such as the zebra mussel and the rusty crayfish, the best thing boaters and anglers can do is to clean their boats and trailers thoroughly between bodies of water and

put unused bait in the trash, rather than dumping minnows or other bait overboard when they finish fishing. Also important is obtaining your live bait locally and not transporting it from one area to another.

For information about how to avoid spreading these and other invasive species, visit [mdc.mo.gov/node/4086](http://mdc.mo.gov/node/4086).

## Elk Driving Tours at Peck Ranch

A portion of the refuge area at Peck Ranch Conservation Area (CA) has reopened to public access through a driving loop for viewing elk and other wildlife. MDC closed the refuge area in March in preparation for the arrival of Missouri's first group of wild elk, which are part of the Department's ongoing elk restoration project.

MDC has designated a driving loop along roads 1, 11 and 10 of the refuge area that offers elk and other wildlife viewing opportunities along fields, streams and forested areas. The driving loop begins at the Peck Ranch CA office and is marked along the way. Other roads in the refuge area remain closed to the public. Man-



Spotted knapweed

KNAPWEED: STEVE DEWEY, UTAH STATE UNIVERSITY, BUGWOOD.ORG



aged deer hunts on Peck Ranch CA will continue as planned for the fall.

Area Manager Ryan Houf explained that elk seek the shade and food of forested areas during hot summer months and tend to graze in open fields during cooler periods in the fall, winter and spring. He added that the area is not a wildlife preserve and the elk are wild animals.

"While they remain mostly in the refuge area at this point, these several dozen elk have about 23,000 acres at Peck Ranch to roam, and about 221,500 acres within the larger elk restoration zone covering parts of Carter, Reynolds and Shannon counties, so catching a glimpse of them may be a challenge," he said.

Houf cautioned that some gravel roads on Peck Ranch CA may not be accessible to vehicles without adequate ground clearance and some roads may be impassable at times due to high water levels at stream crossings or from flooding.

If people are fortunate to view elk, they must not disturb the animals in any way. Photographs are welcome, but the *Missouri Wildlife Code* prohibits the molesting, pursuing or enticing of wildlife, including elk, unless specifically permitted in the code or through related laws for activities such as hunting, fishing or trapping of specific species, which do not include elk.

MDC acquired 34 elk from Kentucky, which arrived at a holding pen on Peck Ranch CA in early May. After an acclimation period, the elk—along with five new calves—were released to roam the rugged hills and valleys in the Carter County conservation area and eventually spread to the 221,500-acre elk restoration zone.

To find more information about the Peck Ranch CA, including directions to Peck Ranch CA and area maps, visit [mdc.mo.gov/a5203](http://mdc.mo.gov/a5203). Area maps and additional elk information are also available at the Peck Ranch CA office when open.

## Striper, Blue Cat Records

Some fishing records stand for decades. Others last only days. Two impressive records set last year in Missouri already are history.

The 58-pound state pole-and-line record for a striped bass caught at Bull Shoals Lake in July of 2010 was edged out on June 18 by a 60-pound, 9-ounce fish caught by Bruce Cunningham, of Fordland, also at Bull Shoals. He was fishing with

## Did You Know?

Missourians care about conserving forests, fish and wildlife.

### What Missourians Say About Conservation

- » **93 percent** report they are interested in Missouri's fish, forests and wildlife.
- » **73 percent** agree that land should be acquired for fish, forest and wildlife conservation.
- » Missourians are a **uniquely outdoor-oriented** citizenry, with a majority preferring outdoor recreational activities (56 percent) over reading or watching TV (34 percent) or structured sports (9 percent).
- » **91 percent** agree that "It is important for outdoor places to be protected even if you don't plan to visit the area."
- » **79 percent** agree that the Department of Conservation should make an effort to restore animals that once lived or are currently rare in the state.
- » **More than three-quarters** agree that the Conservation Department "should assist communities that want to include trees and green spaces in housing, business and shopping developments" (79 percent).
- » **82 percent** agree that the Department of Conservation should help private landowners who want to restore native communities of plants and animals.
- » **88 percent** approve of hunting for food.

a plastic swim bait. It was his first time fishing for stripers, and the first one he caught.

Small increases are the rule when it comes to new fishing records. However, there was nothing normal about a 143-pound blue catfish caught at Kerr Reservoir on the Virginia-North Carolina border in June. That catch shattered the world record set in July of 2010, when Greg Bernal pulled a 130-pound blue catfish from the Missouri River near Columbia Bottom Conservation Area.

"Thirteen pounds is a pretty good increase," said Andrew Branson, who maintains fishing records for the Missouri Department of Conservation. "It's worth mentioning, however, that 13 pounds is only 10 percent of our state record's weight. There is no question in my mind that the Missouri River holds blue cats that outweigh the new world record. It's just a question of whether someone manages to hook one of them."

Earlier this year, Missouri anglers established first-time records for gizzard shad (1 pound, 8 ounces) and highfin carpsucker (1 pound, 6 ounces). Both records were in the alternative-methods category.

More information about Missouri fishing records is available at [mdc.mo.gov/node/5190](http://mdc.mo.gov/node/5190).



**Bruce Cunningham, of Fordland, caught this 60-pound, 9-ounce record striped bass June 18 at Bull Shoals Lake.**



Blue-winged teal

## Early Teal Season Sept. 10-25

Breeding bird counts for blue-winged teal are in, and the news is good again this year. The 2011 early teal season will be 16 days long.

The U.S. Fish and Wildlife service bases the season length on how many of this species are counted in surveys of their nesting areas early in the summer. If the blue-winged teal breeding population estimate is 4.7 million or more, the early teal season runs for 16 days. Last year's blue-winged teal breeding population estimate was 6.3 million. This year's estimate is 8.9 million, so the season will run from Sept. 10 through 25.

## Waterfowl Reservations

Hunters who plan to apply for reservations at Conservation Department managed wetland areas will find the same three areas under the Quick Draw system this year.

You can apply for reservations at 12 wetland areas from Sept. 1 through 15 at [www.mdc.mo.gov/7559](http://www.mdc.mo.gov/7559). Eagle Bluffs, Grand Pass and Otter Slough conservation areas are still under Quick Draw. For those three areas, a drawing on Monday of each week will assign hunting slots for the following Friday through Monday. A Quick Draw

each Thursday will assign slots for the following Tuesday through Thursday.

The traditional system assigns reservations months in advance. Quick Draw allows hunters to take weather and other conditions into account when deciding when and where to apply.

Neither Quick Draw nor the traditional systems allow nonresidents to apply for reservations. However, resident hunters who draw reservations can include nonresidents in their hunting parties. Also, nonresidents can take part in the daily, on-site "poor-line" drawings under both systems.

Under Quick Draw, the computer drawing determines the order in which successful applicants are allowed to select hunting spots. It also determines where hunting spots for the "poor line" will fit in the daily order of selection. On any given day, the No. 1 spot can be in either the Quick Draw or "poor-line" portion of the draw.

## National Trappers' Convention

Don't forget about the National Fur Trappers Association's 52nd annual convention in Columbia Aug. 4 through 7. For those four days, central Missouri will be the center of the nation's trap-

ping universe, with hundreds of trappers and vendors of trapping equipment demonstrating their wares and skills. For more information, visit [www.nationaltrappers.com/2011nat.html](http://www.nationaltrappers.com/2011nat.html).

## Responsible Future Landowners

Conservation depends largely on the efforts of landowners. This is true both for current landowners and for those who will manage land in the future.

The Conservation Department works with landowners to employ the best land-management practices that sustain healthy land and conserve the state's forests, fish and wildlife. In addition to the many opportunities MDC offers current landowners, the Department also invests in the future of conservation by educating some of the state's future landowners and managers by partnering with the Missouri FFA Organization.

MDC coordinates "Conservation Day" at Missouri FFA Leadership Camp once a week each of the six weeks it is offered during June and July. Held at Lake of the Ozarks State Park's Camp Rising Sun, the weeklong camp draws about 200 students each week. Students participate in leadership education sessions as well as



various recreation activities. For one morning of the five-day camp, conservation experts teach responsible land-management practices for FFA students to use in their futures as potential farmers, landowners and agricultural leaders.

"There are so many different sides to agriculture," said FFA State President Brady James. "We try to meet all needs accordingly so we can open doors for FFA students to develop their interests in all areas, and that includes conservation."

Conservation Day introduces students to ongoing conservation concerns through six hands-on learning stations taught by MDC staff. This year's topics were: urban wildlife management and managed hunts, ethical decision-making for conservation dilemmas, fishing basics and fish identification, management practices for healthy streams, tree identification and safe and ethical decision-making when hunting and fishing.

"FFA students represent future landowners of Missouri," said MDC Education Programs and Curriculum Supervisor Kevin Lohraff. "One of the best things we can do to invest in conservation for the future is to educate private landowners on good conservation practices for their land. In this case we are helping FFA students learn the best management practices for farms and properties so they can use them in the future."

According to Lohraff, conservation efforts on private land are key to statewide success.

"Ninety-three percent of Missouri's land is privately owned," he said. "If conservation is going to work in Missouri, it will be because private landowners practice it."

Conservation and FFA are a natural fit, added FFA Camp Director E. H. Hirschvogel. "So many of our kids are already very active with Missouri wildlife, and students who haven't been involved in conservation learn so much from MDC's Conservation Day."

## Grant Helps Young Hunters

A \$10,000 grant from the Missouri Conservation Heritage Foundation is boosting an organization that introduces youths to hunting traditions.

The Missouri Hunting Heritage Federation (MHHF), based in Pleasant Hill, Mo., conducts clinics and guided hunts to introduce young people ages 9 to 17 to archery and firearms hunting. Participants take a hunter safety course, practice shooting firearms and then get to go hunting

with experienced mentors. The nonprofit group used the Heritage Foundation's grant to purchase equipment, such as firearms training gear, trap shooting equipment and youth model firearms, plus a trailer to haul the gear to clinic sites.

MHHF Executive Director Allan Hoover says the foundation's support has been critical to the mentoring group's success.

"When I pull in with the trailer, our chapters have everything they need to conduct a clinic," Hoover said.

The federation welcomes new members, volunteers and donors who want to help introduce youths to hunting. Many of the young participants have no other access to the hunting sports. For more information, call Hoover at 816-540-3908, or visit [www.mhhf.us](http://www.mhhf.us).

The Missouri Conservation Heritage Foundation is a nonprofit, charitable organization that provides funding for conservation and outdoor recreation projects. For information or to donate, go to [www.mochf.org](http://www.mochf.org).

## Gov. Nixon Appoints St. Louisan to Conservation Commission

Gov. Jay Nixon announced on July 13 the appointment of St. Louis businessman and longtime conservationist James T. Blair, IV, to the Missouri Conservation Commission. The Governor has appointed Blair (R) to a term that expires June 30, 2017. Blair replaces William F. "Chip" McGeehan of Marshfield whose Commission appointment expired June 30.

"Jim Blair has demonstrated his dedication to conservation in Missouri through his many years of leadership at several of the most pre-eminent conservation organizations in our state," Gov. Nixon said. "That leadership experience will be of great value on the Conservation Commission in its role of managing the state's forestry and wildlife resources."

Missouri Department of Conservation Director Robert Ziehmer praised Blair for his longtime service to and passion for conservation. "Jim Blair's enthusiasm for conservation and his life experience in both business and outdoor pursuits will prove beneficial in the Commission's important work."

Blair is past president of the Missouri Conservation Heritage Foundation, a current board member for the Conservation Federation of Missouri, and has served on local, state and national committees for Ducks Unlimited. He and his wife, Anna, are avid hunters and outdoor enthusiasts.

Blair also has a family history of commitment to conservation with his father, Jim Tom Blair III, serving as a commissioner from 1965 to 1977.

Blair is a principal and member of the board of directors at Moneta Group LLC, one of the nation's largest registered investment advisory firms. He is a certified financial planner and an accredited wealth management advisor. He is regularly ranked among the top financial advisors in the country. In addition to his activity in conservation causes, Blair serves as the board director of the St. Louis chapter of the National MS Society, and is an advisory board member for the MS Corporate Achievers Campaign.

The Missouri Conservation Commission controls, manages, restores, conserves and regulates the bird, fish, game, forestry and all wildlife resources of the state, including hatcheries, sanctuaries, refuges, reservations and all other property owned, acquired or used for such purposes, as well as the acquisition and establishment of those properties.

Blair's appointment will be subject to confirmation by the Missouri Senate.



James T. Blair, IV

# Cooking Wild in Missouri

New colorful cookbook shows off the Show-Me State's game, fish, nuts, fruits and mushrooms.

by REBECCA MAPLES

Salad Niçoise is one of my favorite summer patio meals, and I never tire of it. I take great liberties with the traditional French recipe (made with tuna)—changing it up every time I make it with different fish and vegetables. I use whatever is fresh and seasonal or whatever is in the fridge that needs eating. It calls to me in late spring during asparagus and new potato season, and I make it every few weeks until the last green beans have been picked in early fall. Beautiful green vegetables are a visual and gustatory must in this composed salad. Consequently, asparagus or edible-pod peas in late spring give way to young, slender green beans in summer. Add another six or eight vegetables of varying colors, textures and shapes (new potatoes are requisite). Sweet corn in July sits in for button mushrooms earlier in the year and dead-ripe tomatoes replace avocados.

## smoked paddlefish Niçoise

Serves 4

### Salad

2 pounds smoked paddlefish or trout, cut into bite-sized pieces (See *Smoked Fish* on page 97.)  
 ½ pound green beans, cooked (or another green vegetable such as asparagus or edible-pod peas)  
 12 small new potatoes, cooked  
 20 cherry tomatoes or other tomatoes  
 3 ears fresh corn, cooked and cut off cob  
 8 small beets, red or golden, cooked  
 12 calamata olives  
 2 hard-cooked eggs, quartered  
 1 medium red onion, sliced  
 ¼ cup finely chopped fresh parsley (also chives and basil, if available)  
 Optional: avocado, mushrooms, sweet red or yellow bell pepper

### Lemon vinaigrette

1 large lemon  
 Extra-virgin olive oil  
 Garlic  
 Salt and freshly ground pepper  
 Lemon zest

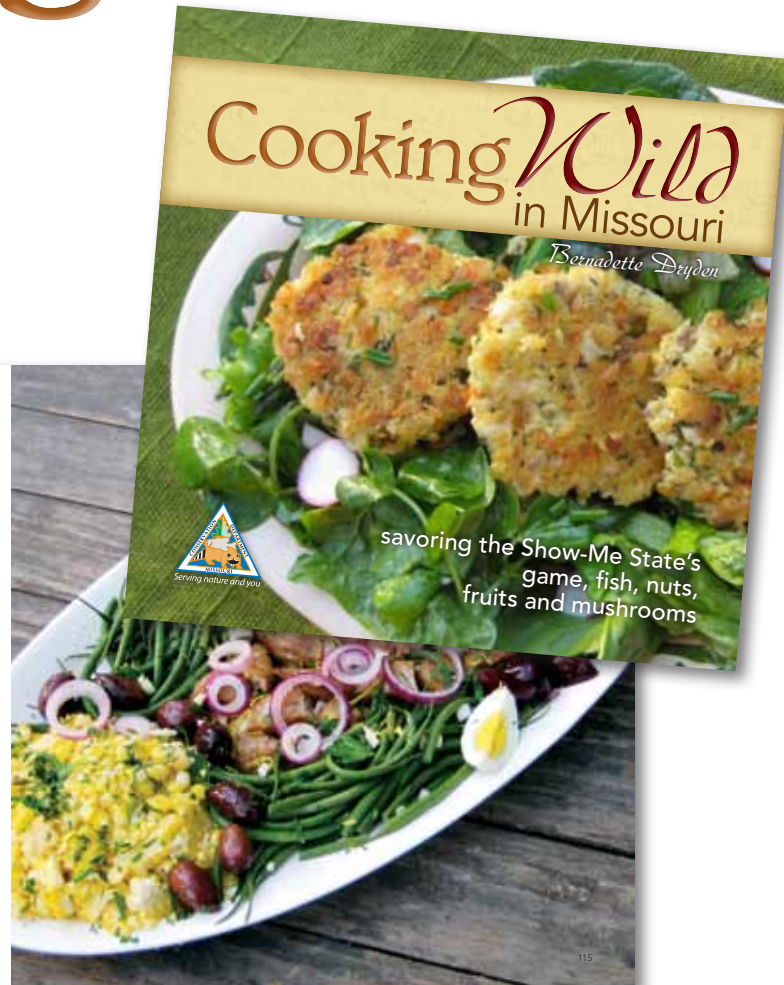
A couple of hours before serving, I usually steam all the vegetables that need cooking, let them cool and then cut them just before composing them on the platter.

To compose, place fish in center of platter and surround it with vegetables, keeping each in separate groups. Stud the display with olives and eggs, arrange red onion slices over all and sprinkle with parsley. Minutes before serving, generously drizzle lemon vinaigrette over all.

Serve with chunks of crusty bread and your favorite summer white wine.

“Learn to eat with the seasons; enjoy local foods when they’re most abundant and delicious. After you’ve tasted local heirloom tomatoes in all their glorious shapes, colors and sizes, you’ll never be able to buy another rock-hard, anemic tomato shipped from 1,000 miles away in December.”

—BCD



**T**HE CONSERVATION DEPARTMENT NOW OFFERS beginner cooks to gourmet chefs a colorful new cookbook that emphasizes local, seasonal ingredients in tempting appetizers, fresh salads, savory stews, elegant entrées and delectable desserts.

*Cooking Wild in Missouri*, created by author Bernadette Dryden, presents more than 100 kitchen-tested recipes along with detailed instructions to help savor Missouri’s game, fish, nuts, fruits and mushrooms. *Cooking Wild in Missouri* also features color photographs on nearly every page and tips to make time in the kitchen easy, efficient and fun.

“I adapted Missouri’s foods to recipes I had made before and recipes from other Conservation Department staff,

and I created some recipes on my own,” Dryden said. “It was just a matter of adapting local foods to the knowledge I already had, and experimenting.”

Dryden, a former publications editor for the Conservation Department, is a lifelong cook and food enthusiast. She has travelled extensively and experimented with various cuisines, many of which influenced recipes in her book. For example, Dryden adapted Missouri’s wares to Italian gelato, French Niçoise and cassoulet, Greek moussaka, Chinese and Korean dishes and even sushi, along with a bounty of classic Missouri dishes.

“My aim is to give Missourians a collection of recipes for cooking native foods in a variety of ways,” Dryden said.



“Missouri’s game, fish, nuts, fruits and mushrooms adapt beautifully to recipes from around the world.”

Dryden is a firm believer in the benefits of eating locally grown foods for several reasons.

“Fresher always tastes better, so the closer you can eat something to its source the better it will be,” she said. “Just as important, is that when you hunt, fish or forage, you know the source of what you’re eating.”

Dryden also noted the importance of the state’s culinary heritage in creating the cookbook.

“I intend for this book to reflect proudly upon our state’s native culinary traditions by giving voice to people involved in the producing and procuring of local foods,” Dryden said.

While writing the book, she interviewed nut growers, mushroom and fruit foragers, hunters and anglers, many of whom she features in chapter introductions and sidebars. These include a hickory-nut grower from Osage County, a waterfowl hunter from Boone County and a few tips from hunters and anglers on bringing in the best meal and passing on traditions.

Dryden shares various pointers throughout the book on stocking a kitchen, selecting the best ingredients, finding foods and farmers markets in Missouri, developing a personal herb garden, using freshly ground spices, adapting recipes, possible pairings, re-using leftovers, general cooking advice and how to bring out the best in each dish.

According to Dryden, appreciating the foods Missouri has to offer is a way of connecting with nature.

“We have to eat to live, so why not enjoy food to its fullest, including learning where it comes from and how to prepare it?” she said. “If you pursue fresh, local and seasonal foods, you’ll inevitably find yourself out in nature.”

*Cooking Wild in Missouri* can be purchased for \$15 plus shipping and handling, and sales tax (where applicable) by calling toll free 877-521-8632 or visiting [mdcnatureshop.com](http://mdcnatureshop.com). You may also visit locations in our nature centers and field offices where MDC products are sold (see Page 3 for regional phone numbers to call for a location near you). ▲

For a sneak peek at *Cooking Wild in Missouri*, try these tasty temptations:

## Bernadette’s Catch-All Muffins

- 1 ½ cups sugar
- 2 ⅓ cups flour
- 2 ½ teaspoons baking soda, sifted
- ½ teaspoon salt
- ½ cup oil
- 2 eggs
- 2 cups buttermilk
- 1 cup boiling water
- 3 cups wheat bran
- 1 cup golden raisins (or part dried cranberries, dates or figs)
- 1 cup pecans or hickory nuts (toasted lightly, preferably)

Blend together first four ingredients (sugar through salt) in one bowl and next three ingredients (oil through buttermilk) in another. Then, gently mix all seven together.

Meanwhile, pour water over bran and fruit in a separate bowl; let stand a few minutes, then stir and gently combine with the batter. Stir in nuts. Pour into medium-sized muffin tins lined with paper cups. (Batter also will keep in refrigerator for at least a week.)

Bake in a 400°F oven for 15 to 20 minutes or until a toothpick inserted in muffin’s center comes out clean. Turn muffins onto a rack to cool.

**Makes about 20 muffins**







## Trout and Sprout Salad

**Leftover grilled or baked trout, broken into bite-sized pieces**  
**Fresh spinach**  
**Mixed lettuces**  
**Bean sprouts**  
**Cilantro**  
**Green onion**  
**Garlic tops (the green tops of fresh garlic) or freshly minced garlic**  
**Soy sauce**  
**Sesame oil**  
**Rice wine vinegar**

I tossed the trout together with all the vegetables, a little soy, toasted sesame oil and rice wine vinegar. It was perfect! You also could add such things as peanuts, mung-bean threads and avocado. Fresh orange sections, carrots, red peppers or cucumbers come to mind, as well.

**Serves 1 to 20 depending upon how much trout you have**



## Pecan-Orange Granola

- 8 cups rolled oats
- 2 cups coarsely chopped pecans
- 2 cups raw sunflower seeds
- 1 cup sesame seeds
- 1 cup shredded unsweetened coconut
- 1 teaspoon salt
- 1 cup honey
- 3/4 cup vegetable oil
- 1 teaspoon almond extract
- Juice and zest (chopped) of 4 oranges
- 2 cups chopped dried fruit

Preheat oven to 350°F. In a large mixing bowl, toss together the oats, nuts, seeds, coconut and salt. Over low heat, warm the honey and oil in a medium saucepan, stirring until well combined. Remove from heat and stir in almond extract and orange juice. Pour over the dry ingredients and stir well with a wooden spoon. Work the mixture with your hands, if needed, until everything is damp.

Spread mixture no deeper than ½ inch on large, rimmed baking sheets. Bake for 30 to 40 minutes, stirring several times, until crispy and golden. When the granola has cooled, stir in the zest and dried fruit. Store granola in jars.

**Makes about 5 pounds  
(a generous gallon) of granola**



## Chanterelle and Polenta Foil Packs

- 2 cups fresh chanterelles
- 2 tablespoons butter
- Salt and freshly ground pepper
- 1 tablespoon extra-virgin olive oil
- 1 polenta log
- 4 sprigs fresh rosemary

Clean chanterelles and tear into bite-sized pieces, leaving the very small ones whole. Sauté in butter with salt and pepper to taste for 4 to 5 minutes, or until liquid has evaporated.

Cut 4 12- by-12-inch squares of aluminum foil. Spread olive oil lightly on each piece. Place a slice or two of polenta on foil. Top with chanterelles and a rosemary sprig. Fold up foil and bake over hot coals for about 10 minutes, or a bit longer if you prefer the polenta edges crunchy.

**Serves 4**





# Clearing the Water

*Keeping cattle out of  
streams through the Fishers  
and Farmers Partnership.*

*by* CHRIS CANIPE • *photos by* DAVID STONNER

Little Bourbeuse River passes through  
Herman Merkel's property near Bourbon, Mo.



**H**ERMAN MERKEL IS A THIRD-generation farmer with a cattle operation near Bourbon, Mo. His grandfather ran it as a dairy farm, and his father kept a feedlot in town. Herman runs a calf-cow operation, breeding and grazing calves until they top 500 pounds and can be sold to another operation where they're raised to full weight. Merkel is 62 years old. "It's what I do full-time, and it's what I've been doing for 40 years," he said.

As steward of the family business and the family land, Merkel has more than a passing interest in protecting both. He has worked with local conservation officials for many years to pay for projects that benefit native wildlife and habitat. So when they approached him in 2008 with a project to improve the health of nearby streams and upgrade his farming operation, he was quick to get on board.

"They told me if I fenced off the creek they would install a water system," Merkel said.

Like a lot of farmers, Merkel divides his pastures into paddocks—fenced-in areas that cattle graze for a few days or weeks before rotating to the next. The method distributes grazing and allows the grass to regenerate. But one area was always under stress. A branch of the Bourbeuse River runs through Merkel's property and was the only source for water. That meant his cattle were constantly convening near the creek, leaving their waste and trampling the banks.

With the help of his local Conservation Department office, Merkel obtained a cost-share arrangement to pay for the construction of wells and pumps that made water available for livestock throughout the property. In exchange, he agreed to fence off the creek entirely.

"Any time you can concentrate those cows in a smaller area, they're not disturbing the stream if they don't have to get into it," Merkel said. "I've seen the stream get clearer and the banks regenerate."

### *Local and National Partnerships*

Merkel's efforts span beyond his own fence line. He has served for the past eight years on the six-member landowner committee that guides restoration efforts in the Lower Bourbeuse watershed, which spans Crawford, Gasconade and Franklin counties. With technical assistance from conservation staff, the

committee helps landowners apply for funding to help build stream crossings and water systems through programs like the Fishers and Farmers Partnership.

Fishers and Farmers falls under the National Fish Habitat Action Plan—a large-scale initiative to promote stream health and sustainable agriculture. Merkel's water project is typical of the program's approach in that it empowers landowners to drive the restoration process through projects that benefit both conservation and their bottom line.

"I love the Partnership," said Kenda Flores, an aquatic habitat specialist with the Department of Conservation.

Flores already had a reputation for helping farmers build reinforced stream crossings, giving them a reliable place to move livestock and equipment. In exchange, landowners agreed to build fences that keep cattle away from the stream, and to plant grasses and trees along the bank. The measures improved water quality and allowed the banks to heal. The crossings were a big hit.

"When I started putting in stream crossings, my reputation really soared in Crawford County," Flores said. "That got us miles and miles of riparian corridor."

Flores and fellow Department biologist Rob Pulliam had long worked together to help landowners offset the costs of projects that benefited waterways. When the Fishers and Farmers money became available in 2008, it meant they

**Herman Merkel, left, has worked with local conservation officials such as biologist Rob Pulliam, right, for many years to pay for projects that benefit native wildlife and habitat.**





**When livestock frequent a waterway, it degrades water quality. Programs such as Fishers and Farmers help landowners pay for projects that will help native wildlife and habitats.**

could pay for a larger share of water system and crossing projects because it wasn't expressly a state or federal program.

### *Flexible Grants*

Non-federal and non-state grants have more flexibility than government programs, which often include stipulations about how much each party can spend. Fishers and Farmers is funded by grants from several organizations including the Audubon Society and the Missouri Agribusiness Association, as well as state and federal partners like the U.S. Fish and Wildlife Service and the Missouri Department of Conservation.

"Historically, we offered 75 percent cost-share to do these kinds of projects under other programs and partnerships," Pulliam said.

Despite what they saw as obvious advantages in water systems and crossings, Flores and Pulliam had difficulty convincing landowners to take part. After helping Merkel install his water system, they asked what he thought it would take to get others involved and he said it came down to money.

"We suggested upping the cost share to 90 percent," Merkel said. "That helped. Everybody needed water because everybody was doing rotational grazing."

Rotational grazing created an opportunity for cooperation. Farmers like it because it helped them maximize their grazing space. But if they didn't have distributed water sources, the path to the creek was always under stress and couldn't be used for grazing. Distributed water



sources kept livestock out of the creek, allowing farmers to use all of their space.

### *Water Quality and Conservation*

When livestock frequent a waterway, it degrades water quality. Manure and urine end up in the creek, and the constant pressure of heavy hooves erodes banks. When banks collapse, the sediment load increases, and the insects and invertebrates that make up the bottom of the food chain start to disappear.

The problem isn't new, but it has taken its toll over time. In 2001, the scaleshell mussel was listed as an endangered species by the U.S. Fish and Wildlife Service. The small freshwater mussel was once found throughout the eastern U.S. but is now found in only 14 rivers in Arkansas, Oklahoma and Missouri, including the Bourbeuse. But what was bad for the scaleshell was good for conservation funding.

"It's a major advantage to have endangered species because money becomes available," Flores said. "We want to keep this species in the rivers and we don't want it to go extinct."

Water systems, crossings and fences help decrease stress on the streams and benefit fragile species like the scaleshell mussel. By matching landowners with programs like Fishers and Farmers, Flores and Pulliam help pay for projects that would otherwise be prohibitively expensive.

"When I worked with a landowner I didn't have a mountain of paperwork for them to sign," Flores said. "I had a single-page contract. I could say 'here's how much money I have. It's a 90-percent cost share, and here's how much you're going to get back.' And they got it back. That's really what built the trust. We did what we said we were going to do."

### *Extraordinary Actions*

Dave Dunn runs an operation similar to Merkel's and lives nearby. A mile-long branch of the Boone River runs through Dunn's property and is now completely fenced off after he built a watering system on his property. Dunn now serves on the landowner committee and is a champion of the Fishers and Farmers Partnership and the work Flores and Pulliam helped fund.

"The most important thing about it is that people who own the land and the people who have an interest in wildlife need to work together. It's one of the programs where they can," Dunn said. "What made it work here was that our contacts with Department of Conservation were sensible and recognized where our needs came together."

In April 2010, the Conservation Department and the Lower Bourbeuse Landowner Committee received national recognition through the National Fish Habitat Action Plan. At a conference in Washington D.C., Flores accepted the award for Extraordinary Action in support of Fish Habitat Conservation along with Bob and Nicky Baker of the landowner committee.

Pulliam said he sees his job as helping farmers achieve business goals that benefit the land. "There's no way I'm going to be successful at my job if I don't understand the business of my target audience," he said. "We have to find the products and services that help our goals, but it has to help them reach their goals as well. ▲



**The scaleshell mussel is an endangered species only found in 14 rivers, one of which is the Bourbeuse River on Herman Merkel's property. Water systems, crossings and fences help decrease stress on streams and benefit the fragile species.**



**A mile-long branch of the Boone River runs through Dave Dunn's property and is now completely fenced off after he built a watering system for his cattle.**









# Kids and Creeks

Missouri's smaller waterways are great places to introduce kids to the outdoors.

by MARK GOODWIN • photos by DAVID STONNER

**L**AST SUMMER, AT FIRST LIGHT, I PARKED ALONG A GRAVEL BAR ON THE Castor River for a wading trip for goggle-eye. I had the place to myself. Then, around noon, a family settled along the river, close to where I had parked. A young couple in swimsuits sat in the shallows at river's edge. A little boy, 2 years old at most, sat on the man's lap. All smiles, he kicked and splashed in the water. Further out, a boy of about 8 worked at casting a night crawler toward a downed log on the far bank. A short ways upstream, a girl, just a bit older, was catching crawdads with a small dip net.

"Looks like you all are having a fine time," I said to the couple as I walked toward my truck.

"No better way to spend time with the wife and kids on a warm day," the man replied.

*Amen to that*, I thought.

I received my introduction to the outdoors along Missouri's creeks and streams. So did my wife. We used the same venue for our own three children. If you have a child you would like to introduce to the outdoors, you will find no better setting than Missouri's creeks. Here are some proven tips to help make a creek outing a memorable adventure for any kid.

## Tailor the Trips

Creeks offer a variety of activities that you can adapt to a child's age and inclinations. Even babies enjoy creek time if you match outings to what they like. Babies love attention from people and, by the time they are 4 or 5 months old, they also enjoy toys that fit in their hands. Spread a blanket in the shade on a gravel bar, bring toys and play with your baby, just like you do at home. Pick a warm day, perfect for water play. In the shallows, just inches deep, sit your baby in your lap and let him splash like he does at home in the bathtub. Laugh and make a big fuss over him. With this kind of introduction, by the time kids are 3 or 4 years old, time spent on creeks will often be one of their favorite activities.





**Creeks offer a variety of activities that you can adapt to a child's age and inclinations.**

For preschoolers, buckets and shovels to dig in the sand are a must. Include inner tubes and water mattresses to float around in the water with your kids. Bring along dip nets for catching tadpoles and other creek critters.

Missouri's clear creeks team with life, providing an ideal place to spark a kid's interest in nature. Tadpoles and crawdads will entertain

most kids for hours. A real find might be a softshell turtle hatchling. Help your kids make a little holding area, surrounded by rocks just off the edge of the creek, to contain the animals they catch (don't forget to release them when you go home!). Bring a butterfly net to catch and admire swallowtails that come to the gravel bar to sip nectar.



Creek rocks come in endless colors and shapes. Most kids find them captivating. Spend time exploring gravel bars to see who can find the most unusual one. At the end of every trip, let your child take home a favorite rock or two.

By age 4 or 5, most kids are ready for their introduction to fishing. Clear creeks provide peerless places for first fishing lessons. There's no boredom of sitting and watching an idle cork—you can see the fish.

First, trap minnows using jug traps baited with crushed crackers. Kids often enjoy this part as much as the fishing. With minnows trapped, bait a small hook with a piece of a minnow and fish for longear sunfish. Longear sunfish are aggressive feeders; often a half-dozen or more will swarm in and try to take the bait. Watching this fish action is exciting. On these first attempts at fishing, do all the baiting, casting and hook setting (assisting adults need a fishing permit). Once you've hooked a fish, hand the pole to your child and let him reel it in. If you catch some large ones, and your child is interested, clean a few and take them home for a special meal.

As kids grow older, continue tailoring creek trips to their interests. By the time they are in middle school, they may want to invite a school friend or two. By this age, kids start developing a sense of independence. Though your kids still enjoy your company, place yourself in the background a bit. By high school, they may still enjoy creek trips with you, but including a school friend will most likely be a must—a normal thing as kids grow up.

## Plan for Safety and Comfort

Water poses a drowning hazard. Creeks are no exception; however, the right creek and proper supervision keep these outings safe and fun. When planning a creek trip for small children who do not yet swim, choose creeks that offer no rapids in the immediate area and minimal current. Also, pick spots that offer shallow water, good for wading. Require that small children wear life vests. If you buy one that sports a character from one of your child's favorite animated movies, chances are good they will enjoy wearing it. Use common sense and avoid any scare associated with water. One bad experience can turn some children away from enjoying water play for life.

Many kids like to throw and skip rocks. Ozark creeks offer a limitless supply. Though lots of fun, young kids need close supervision for this activity. I've seen kids try to throw rocks, but release late and throw the rocks behind them. When it's rock-throwing time, be at the child's side to supervise, direct aim and keep all others out of the line of fire—a good 30 feet away in all directions.

Always bring along and use plenty of sunscreen. Today's sunscreens can protect even the most light-sensitive skin. Though most sunscreens are water resistant, after swimming for 45 minutes or so, apply more. Severe sunburn can leave a kid with a negative impression of time spent outdoors.

Wildlife generally avoids contact with humans. Yet some, like horseflies and deer flies, seek us. We represent a meal. Horseflies and deer flies lay their eggs in moving water and, unfortunately, are common along Missouri's creeks. When these flies bite, it hurts—enough to ruin a child's creek trip. To discourage these persistent pests, use insect repellent.

Another way to handle these biting flies takes nerve, but it's highly effective. When horse or deer flies first land on a person, they are wary and difficult to swat. They often fly off before you can swat them. To counter this defense, let it land and then wait. As soon as the fly shuffles its legs a bit and lowers its head to bite, swat it. At this time the fly is focusing on feeding and is far less wary. Teaching this technique to a nervous kid is sometimes tough, but it works almost every time.

## Be Good Stewards

As kids learn to enjoy the outdoors, they also need to learn it is their responsibility to take care of it. Creek outings offer perfect opportunities to do that. At the end of a trip, as you collect gear and load up to go home, have the kids patrol where they played to make sure they left no trash. Join in and help with the patrolling. If you find trash left by others, pick it up and let the kids know that it's good to leave a place in better shape than how you found it.

Creek trips, done right, develop in children a deep respect and love of the outdoors—a shared interest that offers you and your children a common bond that lasts a lifetime. ▲

With this kind of introduction, by the time kids are 3 or 4 years old, time spent on creeks will often be one of their favorite activities.









# A New Threat to Bats: **WHITE-NOSE SYNDROME**

MONITORING AND PROTECTING MISSOURI'S BAT POPULATIONS.

by WILLIAM R. ELLIOTT

**P**erhaps you have heard of **White-Nose Syndrome** (WNS), a new disease of bats caused by an infectious fungus, *Geomyces destructans*. Maybe you saw the TV documentaries showing a carpet of dead bats in a Vermont cave. WNS, a disease that attacks the skin of cave-hibernating bats (but not humans or other wildlife), was discovered in New York State in 2006, and it spread from there. Like many invasive species and wildlife diseases, this fungus probably was accidentally introduced, in this case probably from Europe, where it infects bats without killing them. WNS rapidly spread throughout the northeastern U.S., down the Appalachians, and into Canada, and it has killed at least 1 million bats of six species. In some cases, 75-100 percent of the populations have died.

Missourians value bats and other wildlife. Your Conservation Department has been on the lookout for WNS since 2009 because six of the nine species vulnerable to WNS occur in Missouri caves and abandoned underground mines. With more than 6,500 known caves and millions of bats in caves, forests, cities and farms, Missouri could lose a lot of nature's free benefits.

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A little brown bat with white-nose syndrome in Greeley Mine, Vermont, in April 2009. MDC is monitoring bat populations to try and prevent White-Nose Syndrome from affecting Missouri bats.

## PROTECTING MISSOURI BATS

WNS moved from West Virginia through Tennessee in February and March 2010. We found the first signs of *Geomyces destructans* fungus (Gd) in a Pike County cave in eastern Missouri, April 2010. One little brown bat was found with a possible fungus on its wing, but no WNS infection in its deep tissues. Gray bats and a northern long-eared bat were netted by researchers in Shannon County in May 2010 and proved to have Gd but no infection.

The Department's "White-Nose Syndrome Action Plan" went into effect in April 2010. Based on careful analysis, our WNS Committee and managers restricted access to Conservation Department caves. Access is permitted only if there is a "Restricted Access" sign posted at the entrance, or if a person has a special research permit. Other agencies announced their own cave closure rules.

The Department and the U.S. Fish & Wildlife Service formed the "Missouri WNS Working Group" to bring together state and federal agencies, private landowners and show cave operators how to share information and formulate a statewide, cooperative plan. Agencies and landowners are free to formulate their own policies on cave access. Most state and federal caves are closed or restricted to protect bats and avoid the accidental spread of fungal spores on



**A little brown bat with suspect lesions in its wrist in a private cave in Pike County. This was the first case in 2010 in which the Gd fungus was detected in Missouri.**

## The value of bats ...

Nine of the 15 species of bats in Missouri are vulnerable to WNS. WNS die-offs would severely restrict the ability of bats to consume night-flying insects, especially certain moths and beetles that are agricultural or forest pests. Bats eat a large variety of insects, including a few mosquitoes, some of which are public health pests, but there is little information on how much they control mosquitoes. A preliminary study in Missouri in 2010 looked at the role of gray bats in mosquito suppression.

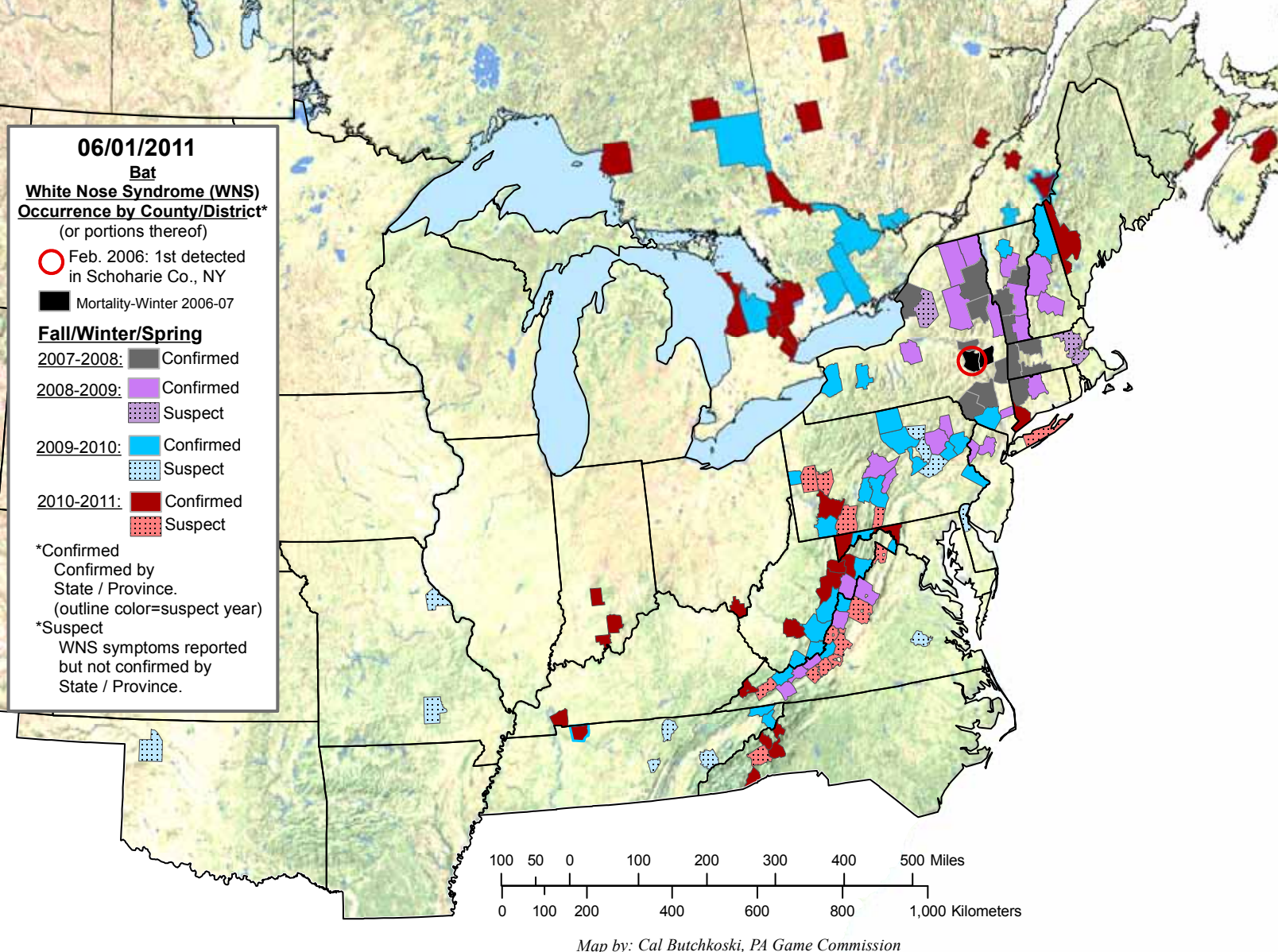
Recent scientific papers estimated that bats contribute \$961 million value each year to Missouri agriculture through insect control. Bats also contribute to forestry, but by an unknown amount. Some of our bats have been declining for decades, but each species has a somewhat different diet of insects. Our gray bats, though still endangered, have increased at some important bat caves because of improved protection by the Department and our partners. We estimate that Missouri's nearly 800,00 gray bats consume 540 tons of insects per year, equal to about 223 billion "bugs." Bats also have great scientific, educational, and aesthetic value to the public. To learn more, see [www.batcon.org](http://www.batcon.org).

clothing and caving gear. Strict decontamination rules are required even of researchers and cavers who go into the caves for necessary work. New, scientifically designed steel cave gates are being constructed on a few important bat caves to protect against intruders while allowing bats to fly in and out.

## SO FAR, SO GOOD

During the winter of 2010–2011, Tony Elliott, Shelly Colatskie, and I (the Department's bat and cave biologists) completed bat surveillance of 29 key caves and mines. So far, so good—we have not found outbreaks of WNS and the bats looked well. We sampled six bats for testing at the National Wildlife Health Center in Madison, Wis. (one gray, two little browns, one tri-colored, and two northern bats). One tri-colored and two northern bats were sent for





testing by Missouri State University scientists. The results for all nine were negative both for WNS infection and presence of the Gd fungus. We re-checked the caves where the first evidence of Gd was found in spring 2010, but the bats looked well.

We did air sampling for fungal spores in the sites with a Burkard air sampler, paid for by a private donor through the Missouri Conservation Heritage Foundation. Our preliminary examination of the microscope slides showed almost no spores of any kind, except one sample that had a Gd-like spore.

So, we can breathe a temporary sigh of relief. Did the Gd fungus disappear in Missouri? I doubt that because we could only study 6 percent of the known bat caves, although they were important ones. Also, the disease moved into several new states, including western Tennessee

and Kentucky by April 2011. Now WNS infections are only 55 miles from Missouri.

### RESTRICTED ACCESS AND CAVE MANAGEMENT

People sometimes ask why decontamination is required to enter publicly owned caves. As a longstanding policy to help protect bats and the fragile and unique ecosystems found in caves, the Conservation Department and other agencies restrict access to many of their caves. Access to Conservation Department caves is permitted only if there is a "Restricted Access" sign posted at the entrance, or if a person has a special research permit. Disturbing bats in caves while they roost or hibernate could increase their stress and weaken their health.

Cleaning all caving gear with bleach or certain quaternary ammonium disinfectants reduces the risk of infecting new caves and bats. The

**White-Nose Syndrome moved into several new states by April 2011, and now the infections are only 55 miles from Missouri.**

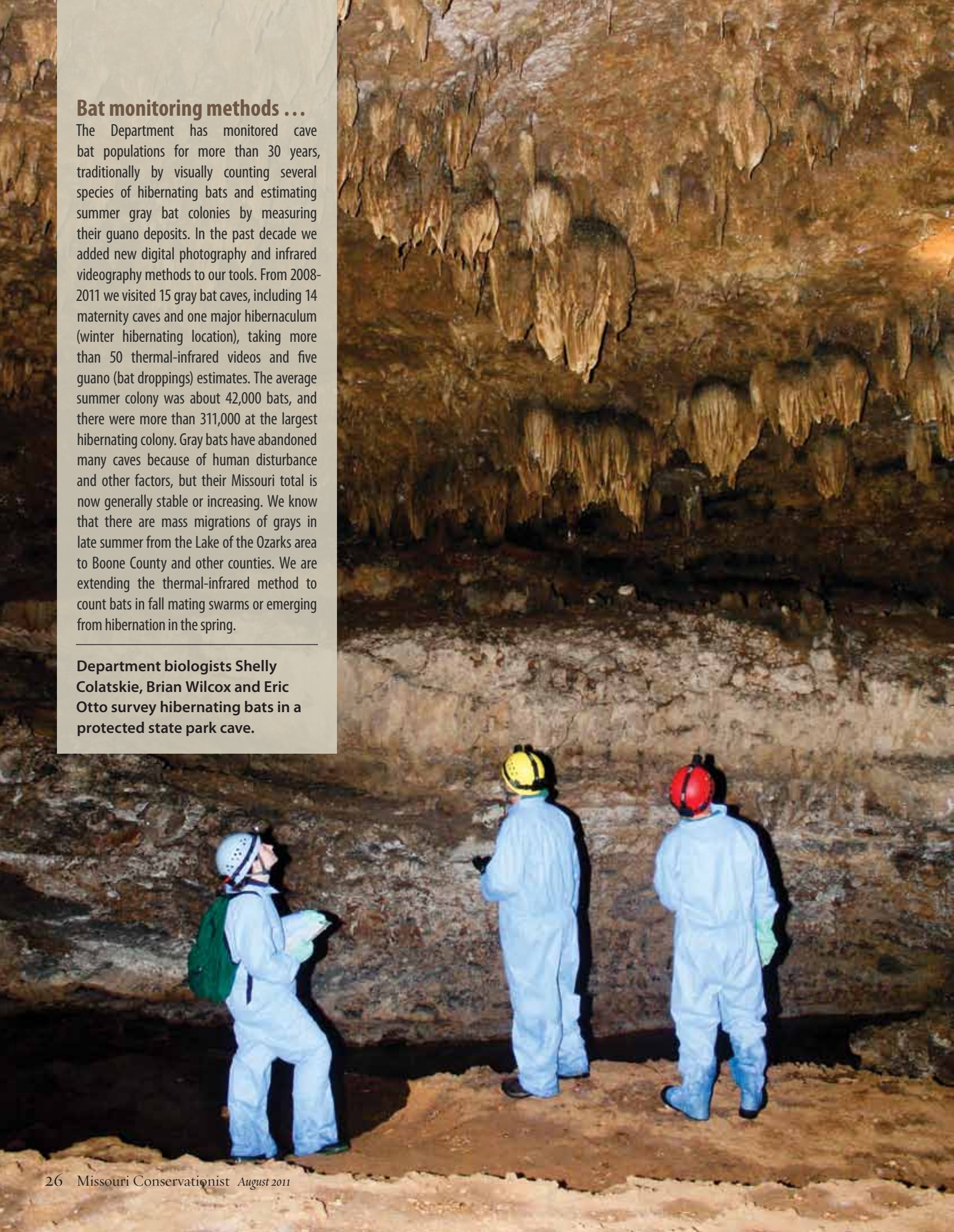


### Bat monitoring methods ...

The Department has monitored cave bat populations for more than 30 years, traditionally by visually counting several species of hibernating bats and estimating summer gray bat colonies by measuring their guano deposits. In the past decade we added new digital photography and infrared videography methods to our tools. From 2008-2011 we visited 15 gray bat caves, including 14 maternity caves and one major hibernaculum (winter hibernating location), taking more than 50 thermal-infrared videos and five guano (bat droppings) estimates. The average summer colony was about 42,000 bats, and there were more than 311,000 at the largest hibernating colony. Gray bats have abandoned many caves because of human disturbance and other factors, but their Missouri total is now generally stable or increasing. We know that there are mass migrations of grays in late summer from the Lake of the Ozarks area to Boone County and other counties. We are extending the thermal-infrared method to count bats in fall mating swarms or emerging from hibernation in the spring.

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**Department biologists Shelly Colatskie, Brian Wilcox and Eric Otto survey hibernating bats in a protected state park cave.**





microscopic spores have been found on some caving gear that was experimentally exposed in a known infected site. Another experiment introduced healthy bats from Wisconsin to two infected mines in Vermont, which no longer had bats. The mines were carefully screened to prevent bat exchange with the outside. Most of the new bats contracted WNS and died, so infected sites can remain infectious for long periods. See [www.fws.gov/WhiteNoseSyndrome](http://www.fws.gov/WhiteNoseSyndrome) and [www.fort.usgs.gov/WNS](http://www.fort.usgs.gov/WNS) for information on WNS and decontamination.

In 2010, amphibian chytrid fungus, *Batrachochytrium dendrobatidis*, was found in eight of 12 caves checked by Department biologists in southern Missouri. Five of seven species of frogs and salamanders were infected. This disease has killed many amphibians worldwide, but this was the first report from caves anywhere. Chytrid and WNS in caves point to the need to practice “clean caving” and decontamination as a precaution against the spread of wildlife diseases.

There is no cure for WNS yet, but researchers are studying medical treatments using known antifungal drugs. Two recent drug trials were unsuccessful. These tests must be done in a lab or controlled environment, not in a cave, because antifungal drugs can be toxic and no one wants to poison the cave environment and its many inhabitants. We are hopeful that a safe, contained treatment for the bats might

be found through research, but it may be years before that happens.

What should landowners do if they have a bat cave on their property? About 500 Missouri caves are known to have bats, but that number may be as high as 5,000. About three-fourths of our caves are privately owned. The Conservation Department welcomes opportunities to collaborate with private landowners on cave management. Landowners are recommended to require cave visitors to decontaminate their clothing, boots and gear before entering a Missouri cave if their gear has been in any other cave before. Visitors also should not enter bat caves between early October and early May, to avoid disturbance of hibernating bats. Summer caves for gray bats also should be avoided. We can assist cave owners in protecting caves by surveying bat use of caves, providing signs, responding to trespass or vandalism issues, and possibly helping someone construct a cave gate or other type of protection. We can also introduce you to responsible cavers who might map the cave and photograph it for you. ▲

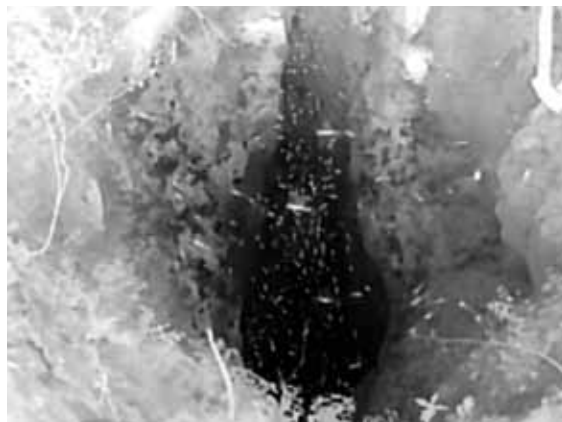
### If you should find a bat ...

Please do not handle bats if you see them. WNS is not related to rabies, but if you find a bat on the ground it has a chance of being sick from something, such as rabies, which can be transmitted to you via a bite. There is a small but real risk that a downed bat could be rabid, and rabies is fatal to humans and mammals. Dead bats do not transmit rabies, but it is difficult to tell when a bat is actually dead, so please do not pick them up barehanded.

The public can help by reporting to the Department dead or dying bats on the ground or near caves in winter or spring, but we do not ask the public to go into caves or mines looking for bats. That can be very disturbing to the bats, especially when they are sick, hibernating or rearing young in summer. WNS is more likely to be found in late winter or early spring, and the bat would likely have a white, fuzzy fungal growth on the face, ears and wings, but not always.

We receive many calls in summer about bats in attics and houses, but those are not WNS-related. All MDC offices have a reporting form for public reports of suspect bats, especially near caves. We are prepared to take those reports and send someone out to investigate certain cases, and possibly sample the bat if it is alive or freshly dead, but we cannot use old carcasses. We are ready to accept good close-up photos of WNS-suspect bats.

Calls about cave bats should go to Dr. Bill Elliott, 573-522-4115, ext 3194, [Bill.Elliott@mdc.mo.gov](mailto:Bill.Elliott@mdc.mo.gov) and/or Shelly Colatskie, ext 3641, [Shelly.Colatskie@mdc.mo.gov](mailto:Shelly.Colatskie@mdc.mo.gov) in the Resource Science Division, MDC Headquarters, PO BOX 180, Jefferson City, 65102. Calls about Indiana bats, forest and urban bats go to Resource Scientist Tony Elliott, Kirksville, 660-785-2424 ext 257, [Anthony.Elliott@mdc.mo.gov](mailto:Anthony.Elliott@mdc.mo.gov).



**At least 310,000 gray bats were seen emerging from the largest bat hibernaculum in Missouri in April. This image was taken using thermal-infrared imaging.**

## Prairie Crayfish

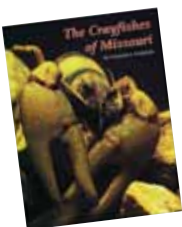
*To survive life on the prairie, this crayfish burrows deep and comes out mostly at night.*

LAST SUMMER I was photo-hiking along a trail at Shaw Nature Reserve in Franklin County when I noticed a crayfish crossing my path. I wasn't too surprised to see the little critter because it had rained the entire evening before and I thought its burrow might have filled with water. Having never seen a burrowing crayfish, I made a closer inspection and found the specimen to be a female with a full nursery of young tucked beneath her abdomen. Irritated at my curiosity, the anxious mother raised her pincers in defense, warning me not to come any closer. At that point I backed off, spread my tripod flat on the ground and assumed my least favorite wildlife photography position—flat on my belly in the wet grass. I made my first images of what I later learned was a prairie crayfish (*Procambarus gracilis*) one of Missouri's four burrowing crayfishes, a group that also includes the devil crayfish, digger crayfish and painted devil crayfish. I also determined that the trail on which I'd been hiking was in the vicinity of excellent prairie crayfish habitat, including a wetland, several ponds and a restored prairie.

Although the prairie crayfish is common in the grasslands of Missouri's prairie region, they are seldom seen due to their secretive and nocturnal nature. Prairie crayfish make their homes in burrows, which must be deep enough to reach moist soil near the water table, sometimes six feet or more down. The mounds of soil that form around the burrow entrances are called chimneys. Prairie crayfish exit their tunnels in the evening or on rainy days to forage and find mates. Like other burrowing crayfish, the prairie crayfish is equipped with gills that are designed to obtain oxygen from the air for extended periods away from water as long as conditions are moist. Prairie crayfish feed on plants and insects and just about anything else they can find, dead or alive. After mating, the female lays her eggs in early spring. The female carries the eggs under her abdomen through two molts (when they shed their hard outside skeleton), at which time they begin to look like miniature versions of their mother as seen in the photograph. When the young are ready to face the world on their own, the mother drops them off at a pond, wetland or other moist habitat.

As I photographed the crayfish with all of her young in tow, I thought about how risky each trek from her burrow must be. I watched her respond frantically, pincers high in the air when a crow passed overhead. It is no wonder that this species prefers to venture out under the cover of darkness. After taking some images I continued down the trail but I eventually looked back to find several crows swooping over my previous location. I hoped the dutiful mother had made it into the tall grass, but then I thought to myself, "Crows have to eat, too."

—Story and photo by Danny Brown



The Conservation Department's guidebook *The Crayfishes of Missouri* covers the habits, habitats and home ranges of 32 species of crayfishes. It features color photos and drawings to help identify these animals. This softcover book is available for \$5 plus shipping and handling, and sales tax (where applicable) by calling toll free 877-521-8632 or visiting [mdcnatureshop.com](http://mdcnatureshop.com). (see Page 3 for regional phone numbers to call for a location near you).





## Canaan CA

*Trail users of all types will enjoy a day at Canaan Conservation Area near Bland.*



PULL ON YOUR hiking boots or load up your mountain bike or saddle horse. Nearly 10.5 miles of trails await you at Canaan CA in Gasconade County. The Department acquired this 1,435-acre area in 1980. In 2008, it opened the long, diverse multiuse trail, which serves hikers, bicycles and horseback riders, except during firearms deer and spring turkey hunting seasons. This trail has three loops, the last of which was completed just last year.

As you travel the multi-use trail, expect to encounter a great variety of wild-life. Apart from the usual deer and turkey, you'll see birds and summer wildflowers as well. Look for the common yellowthroat in wetlands and along streamsides. In the area's woodlands, you'll see and hear summer tanager, eastern wood pewee, the Carolina wren, eastern towhee, yellow-billed cuckoo and great crested flycatcher. The pileated woodpecker and red-bellied woodpecker haunt the area's forests, and grassland/shrubby areas are home to the eastern kingbird, field sparrow, American goldfinch, indigo bunting, gray catbird and red-tailed hawk. For a complete checklist of Canaan CA birds, visit [mobirds.org](http://mobirds.org).

Wildflowers will be most abundant in the open woodlands and fields. In August, those leaning toward yellow blooms, such as goldenrods, sunflowers, foxglove, sneezeweed, coreopsis, compass plant, prairie dock and black-eyed Susans will dominate. The area also features a scenic north-facing slope adjacent to Sulphur Branch and a glade/woodland complex.

A variety of management practices sustain the area's rich natural diversity. In addition to establishing food plots for dove, deer and turkey, area managers have thinned some 30 acres in the northeast portion to improve the structure and quality of the dry woodlands there. A portion of the multi-use trail goes along the thinned area, and signs along the way remind viewers that the downed trees are a necessary part of creating the desired woodland condition.

Take note of the food plots and other habitat areas, and plan to return this fall to pursue fair to good populations of deer, dove, rabbit, squirrel and turkey during season.

Those wishing to camp can find campsites and trailer parking areas off Bock Road on the northern boundary.

As always, visit the area's Web page (listed below) for special notices and to download the map and brochure before your visit.

—Bonnie Chasteen, photo by David Stonner

**Recreation opportunities:** Birding, hiking, horseback riding, picnicking, hunting in season and primitive camping

**Unique features:** This mostly forested area features primitive camping, two intermittent streams, a multi-use trail and two small ponds.

### For More Information

Call 573-884-6861 or visit [mdc.mo.gov/a8106](http://mdc.mo.gov/a8106).









# Hunting and Fishing Calendar

## FISHING

**OPEN** **CLOSE**

Black Bass (certain Ozark streams, see the *Wildlife Code*)  
5/28/11 2/29/12  
impoundments and other streams year-round

Bullfrogs and Green Frogs Sunset Midnight

6/30/11 10/31/11

Nongame Fish Giggling 9/15/11 1/31/12

Trout Parks 3/01/11 10/31/11

## HUNTING

**OPEN** **CLOSE**

Coyote 5/09/11 3/31/12

Crow 11/01/11 3/3/12

Deer

Archery 9/15/11 11/11/11

11/23/11 1/15/12

Firearms

Urban Zones 10/07/11 10/10/11

Early Youth 11/05/11 11/06/11

November 11/12/11 11/22/11

Antlerless 11/23/11 12/04/11

Muzzleloader 12/17/11 12/27/11

Late Youth 1/07/12 1/08/12

Dove 9/01/11 11/09/11

Furbearers 11/15/11 1/31/12

Groundhog 5/09/11 12/15/11

Pheasant

Youth (North Zone only) 10/29/11 10/30/11

North Zone 11/1/11 1/15/12

Southeast Zone 12/01/11 12/12/11

Quail 11/1/11 1/15/12

Youth 10/29/11 10/30/11

Rabbits 10/1/11 2/15/12

Rails (Sora and Virginia) 9/01/11 11/09/11

Squirrels 5/28/11 2/15/12

Turkey

Archery 9/15/11 11/11/11

11/23/11 1/15/12

Fall 10/01/11 10/31/11

Waterfowl please see the *Waterfowl Hunting Digest* or

see [mdc.mo.gov/node/3830](http://mdc.mo.gov/node/3830)

Wilson's (common) Snipe 9/01/11 12/16/11

Woodcock 10/15/11 11/28/11

## TRAPPING

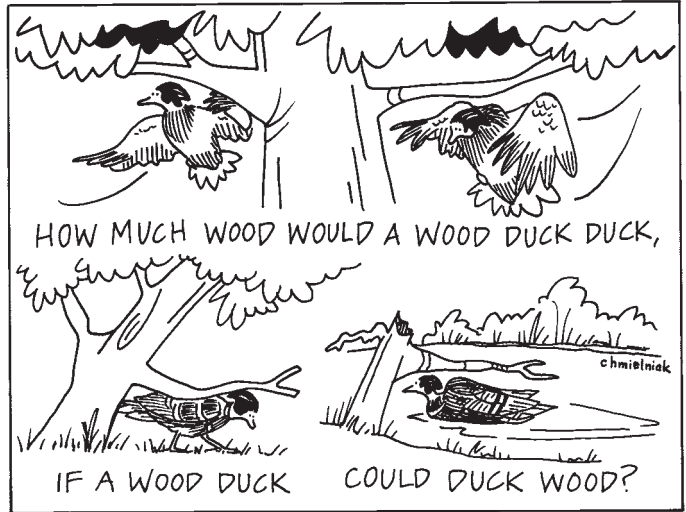
**OPEN** **CLOSE**

Beavers & Nutria 11/15/11 3/31/12

Furbearers 11/15/11 1/31/12

Otters & Muskrats 11/15/11 2/20/12

For complete information about seasons, limits, methods and restrictions, consult the *Wildlife Code* or the current summaries of *Missouri Hunting and Trapping Regulations* and *Missouri Fishing Regulations*, *The Spring Turkey Hunting Regulations and Information*, *the Fall Deer and Turkey Hunting Regulations and Information*, *the Waterfowl Hunting Digest* and *the Migratory Bird Hunting Digest*. For more information visit [mdc.mo.gov/node/130](http://mdc.mo.gov/node/130) or permit vendors.



## Contributors

CHRIS CANIPE is an information graphics designer and freelance writer, as well as a singer and songwriter. He enjoys spending time outdoors running, biking, canoeing and playing disc golf.



DR. WILLIAM R. ELLIOTT, cave biologist for the Department of Conservation since 1998, leads cave research, conservation, management and education, working with many cave owners, scientists and cavers. He also leads Missouri's gray bat recovery work and the Department's White-Nose Syndrome Committee.

MARK GOODWIN is a life-long Missouri resident who lives in Jackson. Since his youth he has spent countless hours on the creeks and rivers that drain Missouri's Ozarks. He looks forward to spending time in the same venue with his four grandchildren.



## Join us on Facebook

[www.facebook.com/MDCOnline](http://www.facebook.com/MDCOnline)

Facebook is another great way to get information about nature and outdoor recreation in Missouri.



## Wingshooting Workshops

Free workshops to help hunters develop wing-shooting skills start this month and continue through Oct. 8. These are hands-on events, including range time with expert shooting coaches and ammunition provided. Topics include choke and load selection for nontoxic ammunition, shooting skills, range estimation and shotgun patterning. Events are scheduled for:

- » **Houston**, Aug. 20 at the Big Piney Sportsmen's Club, call 417-256-7161 for more information;
- » **Warrensburg**, Sept. 10 at University of Central Missouri, 660-530-5500;
- » **St. Louis**, Sept. 16 through 18 at Henges Range, 636-938-9548;
- » **Ashland**, Sept. 17 at the Charles W. Green Con-

servation Area, 573-882-8388, ext. 230;

- » **St. Joseph**, Sept. 24 at MDC's Northwest Regional Office, 816-271-3100;
- » **Kirksville**, Sept. 24 at MDC's Northeast Regional Office, 660-785-2420;
- » **St. Louis**, Sept. 30 through Oct. 2 at Busch Range, 636-300-1953, ext. 302;
- » **Bois D'Arc CA**, Oct. 1 at the Dalton Range, 417-742-4361;
- » **Kansas City**, Oct. 8 at Lake City Range, 816-249-3194;
- » **Hannibal area**, Oct. 8 at Ted Shanks CA, 573-882-8388, ext. 230.

For more information on the effective wingshooting workshops, visit [mdc.mo.gov/node/3710](http://mdc.mo.gov/node/3710).



## AGENT NOTES

*Shooting sports help train responsible hunters.*

HUNTING HAS BEEN a tradition in Missouri for hundreds of years. With this hunting tradition comes great responsibility; that responsibility is being a safe and sensible hunter. Knowing the fundamentals will help you on your way to becoming a safe hunter, and getting involved with competitive shooting sports is a good way to learn these basic skills.

Good shooting fundamentals are best developed at a young age before bad habits are formed. Conservation agents spend many hours each year working with organizations that cater to the younger generation to improve

their shooting skills. I have found one way to play a bigger role in teaching these skills is being involved with some of the organizations that are actively participating in state-wide shooting competitions. Many communities have organizations like FFA, 4-H or even local sportsmen's clubs. Each organization has their own way to help you improve your shooting abilities.

One of the organizations I have spent a lot of time with is the Summersville FFA Trap Team. The team consists of 14 kids ranging from freshman to seniors. Every week, I have watched each team member improve and gain confidence in their shooting skills. Recent Summersville graduate, Dusty Smith said, "I would highly recommend all FFA students who love the outdoors and like to compete individually and as a team to join the FFA Trap Team. It is a fun and rewarding sport, but be prepared to get hooked. This is a sport that can carry on throughout life, and I enjoy every minute of it."



Justin Emery is the conservation agent for Shannon County. If you would like to contact the agent for your county, phone your regional conservation office listed on Page 3.



Subscribe online • [mdc.mo.gov/node/9087](https://mdc.mo.gov/node/9087) • Free to Missouri households



## “I Am Conservation”

Jodi Adams, director of parks for Springfield-Greene County, is devoted to providing outdoor, green spaces for families and children. Jodi believes that “when talking about parks, we’re talking about health, the environment, conservation, transportation and economic development.” By executive order, Missouri communities were challenged to take action to enhance children’s education about nature and to increase children’s opportunities to experience nature and the outdoors. In April, Springfield was recognized as the first community in Missouri to achieve the Governor’s Children in Nature Community award. Expansive parks, extensive greenways and the MDC Springfield Conservation Nature Center with its beautiful woods and miles of trails make it easy to see why Springfield-Greene County would qualify for this award. Adoption of *Nature Unleashed*, the second of MDC’s five Discover Nature Schools educational units, by nearly every Springfield public school fourth grade provided the city with the finishing touch and final criteria piece for the city’s efforts to bring children outdoors and closer to nature—whether in school with their classmates, in a city park with their friends or at home with their families.—*Photo by David Stonner*